SPEED AND ACCURACY IN FORD REPAIR WORK

A Catalogue of Tools

MADE BY

DANIELSON ENGINE WORKS

INCORPORATED

Jackson Boulevard at Canal Street
Chicago

Speed and Accuracy in Repair Work

THE call for efficiency has never been so pronounced as it is now. Everywhere the cry for increased production is heard. Every effort is being made to handle work faster in order to keep the cost per job down to the lowest possible figure.

The labor problems are forcing this condition. And many men are meeting it by adopting methods that tend not only to overcome the problems to a great extent but also to continue speedy production after the labor questions have been settled and are no more.

But in the effort to speed up the work, it is vitally important that accuracy should not be sacrificed. To do so would be to ruin the future of the business. For what is to be gained by rushing a job through the shop in double quick time if it is going to be so imperfectly done as to cause the customers to go elsewhere the next time any work is required?

Proper Equipment Determines Profits

In Ford service and repair shops especially the need for proper equipment is keenly felt. Trying to accomplish good work in a speedy manner with inadequate tools or with tools not suited to the purpose often results in ruining some part difficult to replace, and oftentimes costs more than the job is worth.

Proper equipment not only greatly reduces the number of accidents to motor car parts but also permits rapid work and consequently the handling of a greater volume of business. This, of course, means maximum profits based on minimum cost of production.

The Value of Tools for Definite Purposes

The best equipped shop has a tool for every purpose. And that shop is sure to turn out the best work in the quickest possible time. There you will find wrenches for loosening and tightening nuts and screws, speeders for speeding them on and off, special tools and fixtures that do work otherwise requiring the help of an extra man. Tools made for special purposes save thousands of dollars in wages and permit handling of more work by fewer men.

Danielson Equipment Gives Best Results

Experience has proved the tools and equipment manufactured by us for Ford service and repair shops more profitable to the users than any other brand. For Danielson quality is such that longer life and a greater amount of usage are possible. As an illustration, you will find that the Danielson way of making wrench sockets is by far the most substantial. They are uniform in the thickness of their walls, whereas many ordinary wrenches are sometimes very thin in spots. Danielson sockets are broached, pressed on and pinned, while most others are made in one piece with the shank so that a broken socket means that a whole new wrench is necessary. Should a Danielson socket break, which hardly ever happens, a new one can be quickly attached.

What the Danielson Standard Means

Danielson shop equiqment represents a big ideal. It is the development of a determination to make a line of tools, fixtures and machines for certain purposes and to make them so well that there is not even the slightest cause for criticism. The effort to make each and every piece a masterpiece—to turn out the highest grade of equipment in point of material as well as workmanship—has been constantly in mind. The Danielson standard is one that we have set and adhered to as strictly as human ability and perseverance have been capable of doing it. And as a result you can always depend upon any tool or equipment bearing the Danielson name, or coming from the Danielson shops, as being the very best you can get.

Forty-Two Years of Experience Behind It

Forty-two years ago the Danielson Standard was first set. Forty-two years we have been in the tool and machinery business. Our Mr. Frank Danielson began work in this line at the age of eight, being compelled to stand on boxes in order to reach the tools with which he had to work.

At the age of sixteen the death of his father left him in charge of the machine shop, a position which he handled very successfully. In 1887 he came to America and opened a tool shop of his own. For eight or ten years since that time, at a cost of thousands of dollars, he made many experiments on machinery, and especially automobile and marine engines. This field occupied his time until two years ago when he began to specialize on tools, particularly for Ford repair work.

Mr. Danielson has won considerable fame as an inventor. Among the products of his genius and skill is the once popular D. & J. crank hanger for bicycles.

In 1897 he built his first automobile, of which he constructed every piece except the tires. He built the engine, transmission, body and every part.

This is the experience behind the Danielson Standard—the experience of nearly half a century that you get with every tool and machine you buy from us.

The Best of Rules : Use Danielson Tools

And so, with every point of merit in favor of Danielson tools and shop equipment, there is but one bit of advice to give to every man who works on Ford motor cars and who desires to handle the greatest amount of work in the shortest possible time and with the most perfect workmanship, and that advice is: Buy Danielson equipment.

How To Order

Danielson tools and fixtures should be ordered by number so as to avoid any errors. Shipments will be made C. O. D. or with sight draft attached to bill of lading. We pay cash for all material, which at this time is very difficult to obtain because of the demand for governmental purposes.

All prices quoted are subject to change without notice.

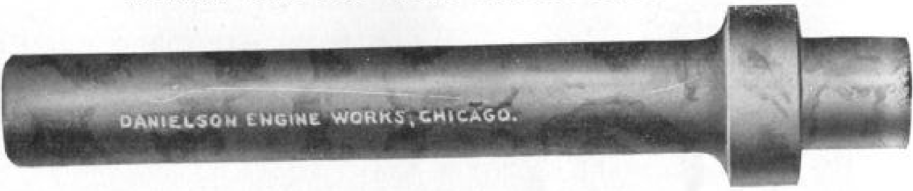
DANIELSON ENGINE WORKS

(Incorporated Under the Laws of the State of Illinois)

Jackson Blvd. at Canal St.
CHICAGO, ILLINOIS, U. S. A.

ARBORS FOR USE WITH ARBOR PRESS

30A



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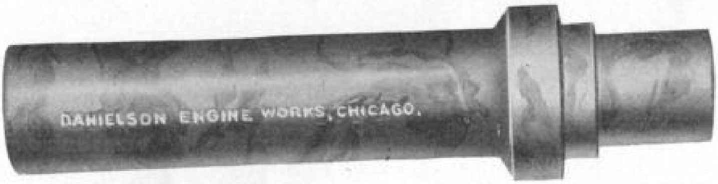

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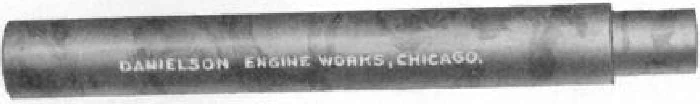

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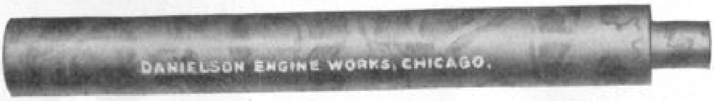

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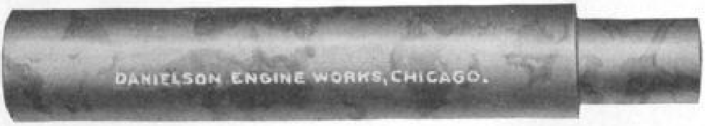
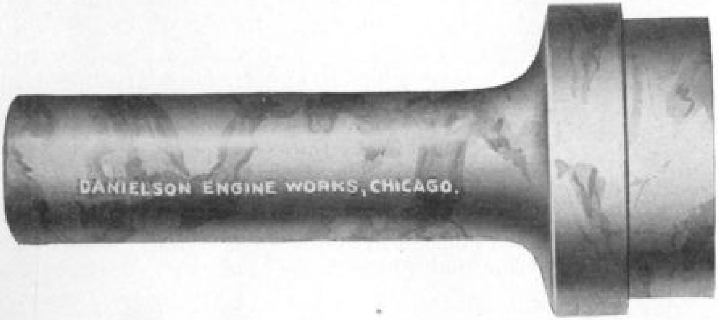


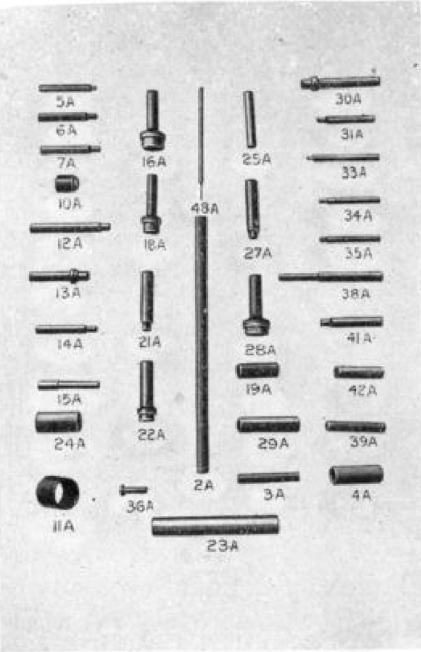
28A



These arbors are absolutely essential in a Ford service station for pressing bushings in and out, also various pins, etc., etc. These arbors are accurately machined and hardened. By using these arbors mars, scratches and burrs are avoided, which greatly facilitates reassembling, saving time and replacement of parts.

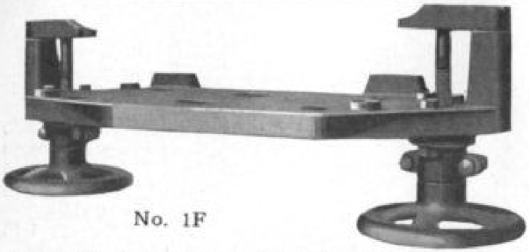
Order by number—see reduced illustrations of the various sizes which we keep constantly in stock.

ARBORS FOR USE WITH ARBOR PRESS



We carry a complete line of the following arbors in stock at all times. Order by number.

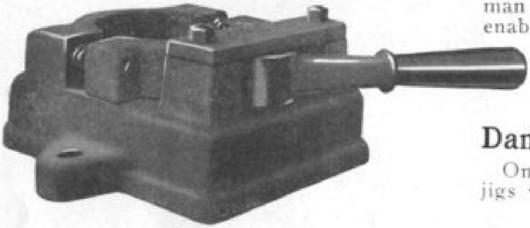
No.	Description	Price
2-A	Bar for aligning Main Bearings	**$4.00**
3-A	Pressing Crank Shaft Gear Off	**1.00**
4-A	Pressing Crank Shaft Gear On	**1.25**
5-A	Driving Out Piston Pin	**1.15**
6-A	Driving Out Piston Pin Bushing	**1.15**
7-A	Driving Rear Cam Shaft Bearing out and in	**1.15**
8-A	Punching Oil Drain Holes in Valve Cages of Cylinder Block	**.85**
8-Aa	Disassembling Valve Pins from Valves	**1.10**
9-A	Prying up Disc Drum (two required). When Drum is on too tight, use Puller	**.80**
10-A	Plug to be used with Driven Gear Puller	**1.25**
11-A	Spacing Transmission Brake Drum while pressing Driven Gear Sleeve Bushings in and out	**.50**
12-A	Pressing Driven Gear Sleeve Bushings out	**1.30**
13-A	Pressing in Driven Gear Sleeve Bushings	**1.75**
14-A	Pressing Triple Gear Bushings in and out	**1.15**
15-A	Expanding Triple Gear Bushings	**2.00**
16-A	Pressing Reverse Drum Bushings in and out	**2.75**
17-A	Driving Slow Speed Bushing out of Drum	**1.00**
18-A	Pressing Slow Speed Bushing in Drum	**2.00**
19-A	Driving on Clutch Disc Drum	**1.00**
22-A	Pressing Differential Case Bushing in and out—old style	**1.75**
23-A	Testing Differential Case, left side, between centers for sprung Drive Gear Flange	**5.10**
24-A	Pressing down Differential Gear on Axle while removing Differential Gear Lock Rings	**1.75**
25-A	Pressing Axle Shaft out of Differential Gear	**.75**
26-A	Driving Differential Pinion Bushing in and out—old style	**1.15**
27-A	Pressing Differential Spider Bushing in and out—old style	**1.15**
28-A	Pressing Drive Shaft Roller Bearing Sleeve in and out	**3.00**
29-A	Driving Drive Shaft Sleeve on Drive Shaft—spaced for pinion	**2.00**
30-A	Driving Drive Shaft Housing Front Bushing in	**2.00**
31-A	Rear Spring Perch Bushing in and out—Rear Main Spring Leaf in and out	**1.15**
32-A	Driving out first Spindle Body Bushing	**1.00**
33-A	Driving second Spindle Body Bushing out Driving both Spindle Body Bushings in Driving Cam Shaft Bushings in and out	**1.15**
34-A	Driving Spindle Arm Bushing in and out	**1.10**
35-A	Driving Front Spring Perch Bushing in and out Driving Front Main Leaf Bushing in and out Driving Spindle Arm Bushing in and out	**1.15**
36-A	Sleeve to be used as an Adapter with a piece of ½-inch drill rod, 18 inches long, to place in Spring Perch Holes of Front Axle for testing for alignment when straightening axle. (Two required.) Use drill rods without Adapter when testing Spindle Body Bolt Holes for alignment with one another	**1.50**
38-A	Driving Steering Post Bracket Bushings in and out	**1.50**
39-A	Driving in Spindle Body and Arm Bolts	**1.00**
40-A	Driving Stationery Cones on and off Spindle	**1.00**
41-A	Starting Crank Sleeve Bushing Driver	**1.15**
42-A	Driving Steering Wheel on	**.90**
43-A	Driving Pin out of Cam Shaft and Commutator Brush Assembly	**1.50**



No. 1F

No. 1F—For Holding Cylinder While Scraping Bearings, Etc. This fixture is designed to hold the cylinder firmly and securely, leaving both hands free to do the work speedily. The cylinder is clamped to the fixtures in less than half a minute by the two hand wheels which are operated from below the fixture.

Price	$18.00



No. 3F

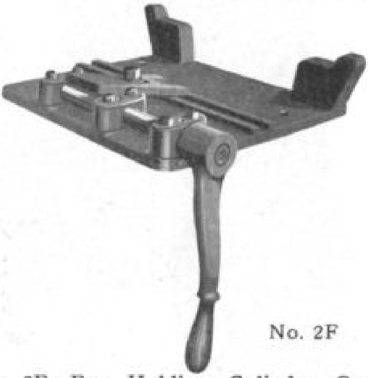
No. 3F—Eccentric Vise for Holding Piston. This fixture is made especially for holding the piston while working on it. Secures perfectly firm grip as it is machined to the exact diameter of the piston. With this device there is positively no danger of springing the piston out of shape when tightening the clamp. Is clamped tight by means of an eccentric lever.

Price	$18.00

No. 17

No. 17—For Testing Level of Main Bearing and Connecting Rod Caps. This gauge enables the workman to obtain perfect accuracy while filing the caps. It is the only means of determining an accurate level and making the caps fit evenly and without rocking.

Price	$8.00



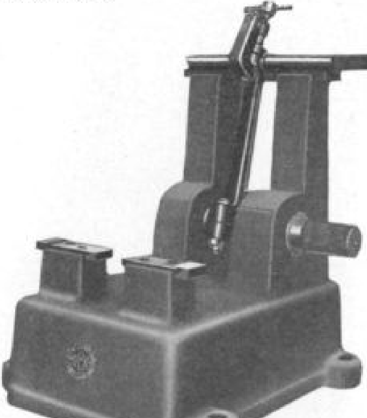
No. 2F

No. 2F—For Holding Cylinder On Work Bench While Assembling. The object of this device is to hold the cylinder perfectly firm and allow the workman the free use of both hands, which enables him to do better work and do it quicker. A half minute's work will fasten cylinder block. Quickly pays for itself.

Price	$15.00

Danielson Connecting Rod Jig

One of the most useful and popular jigs we make.



No. 2J

No. 2J—For Testing Alignment of Finished Connecting Rod. The use of this device to determine the alignment of the connecting rod often saves many hours of unnecessary effort to locate knocks in the motor. By this means it is possible to obtain perfect alignment and thus eliminate the knocks in the shortest time. In this gauge the pins and blocks are hardened and ground, making a very accurate tool.

Price	$50.00

CONNECTING ROD BABBITTING OUTFIT

BABBITTING FIXTURE

FACING FIXTURE

In the five pieces shown on this page we offer one of the finest grade babbitting outfits on the market. You will note by the illustrations that we have sufficient confidence in this outfit to stamp our trade mark upon the fixtures. This amounts to a guarantee of perfect workmanship as set down by the Danielson Standard.

BABBITTING FIXTURE

The babbitting fixture shown on the left is designed to enable the workman to keep busy continually. A circulating system of water cooling keeps the fixture from becoming overheated and necessitating the occasional stopping of work to let it cool off. With this fixture the workman can continue working indefinitely.

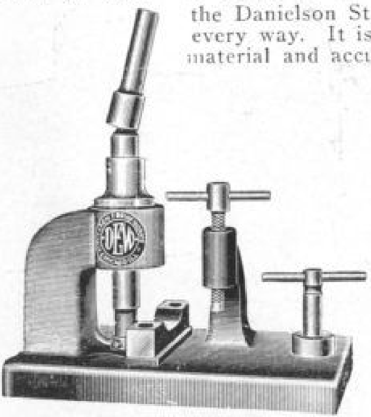
In this device we have endeavored to give our customers the very best that could possibly be made and we are sure that we have succeeded.

Price - $50.00

FACING FIXTURE

There is little to say about this fixture other than that it comes up to the Danielson Standard of perfection in every way. It is well made of the best material and accurate as can be.

Price - $15.00



BORING FIXTURE

BORING FIXTURE

This member of our babbitting outfit is also very accurate and exceptionally well made. The boring bar is hardened and ground and has universal joint. The guiding pin is hardened and ground and the screw and guide block thoroughly hardened.

Price - $75.00

BROACH

BROACH

The broach measures up to the Danielson Standard as a high grade tool. Its accuracy is unquestionably beyond improvement, the tool being hardened and ground to exact size. Only the finest tool steel is permitted to be used in its construction, which guarantees the best work if you specify and insist upon the Danielson.

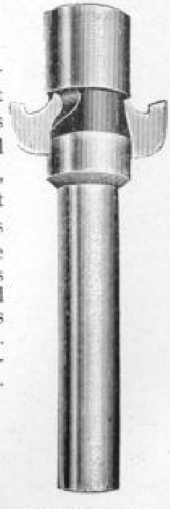
Price - $35.00

FACING TOOL

The facing tool of the Danielson Babbitting Outfit ranks second to none. It is made according to the rigid rules of the Danielson shops, which demand only the best of workmanship as well as the finest material for the purpose. The shank of this tool is thoroughly hardened and ground and the blade is made of the finest tool steel. With this tool you can expect perfect work and get it.

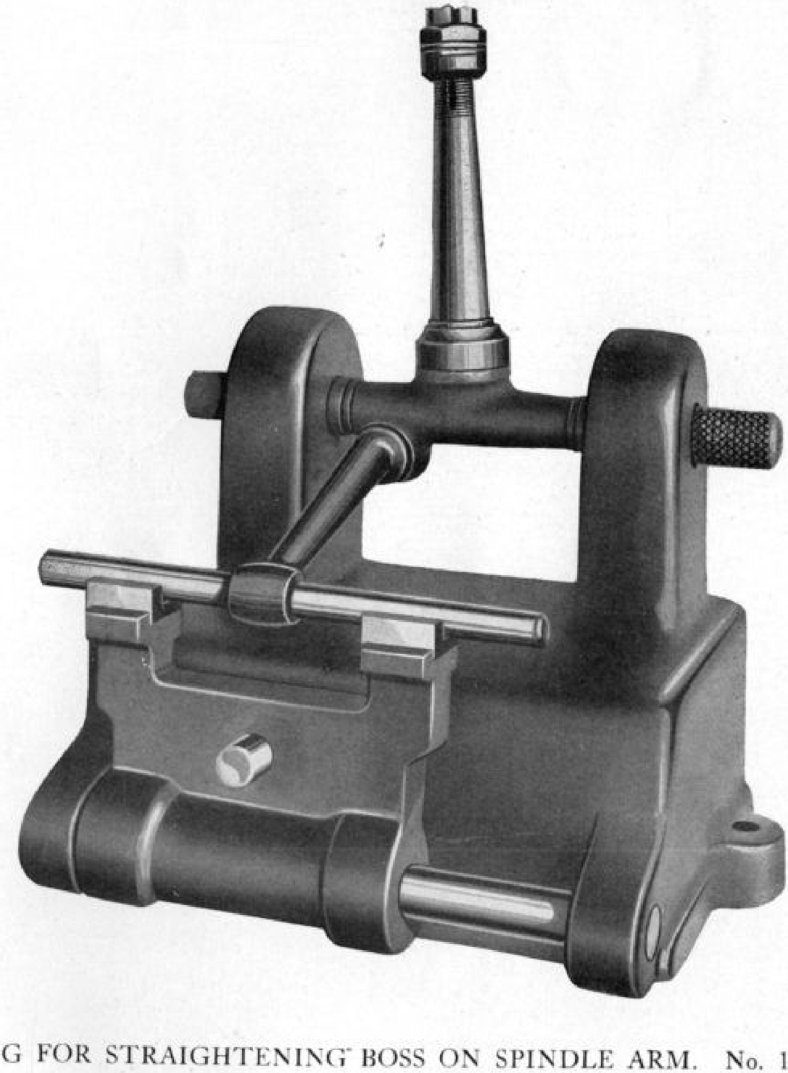
Price - $10.00

The perfect accuracy of this tool enables you to get the very best results—insist upon the Danielson Broach.



FACING TOOL

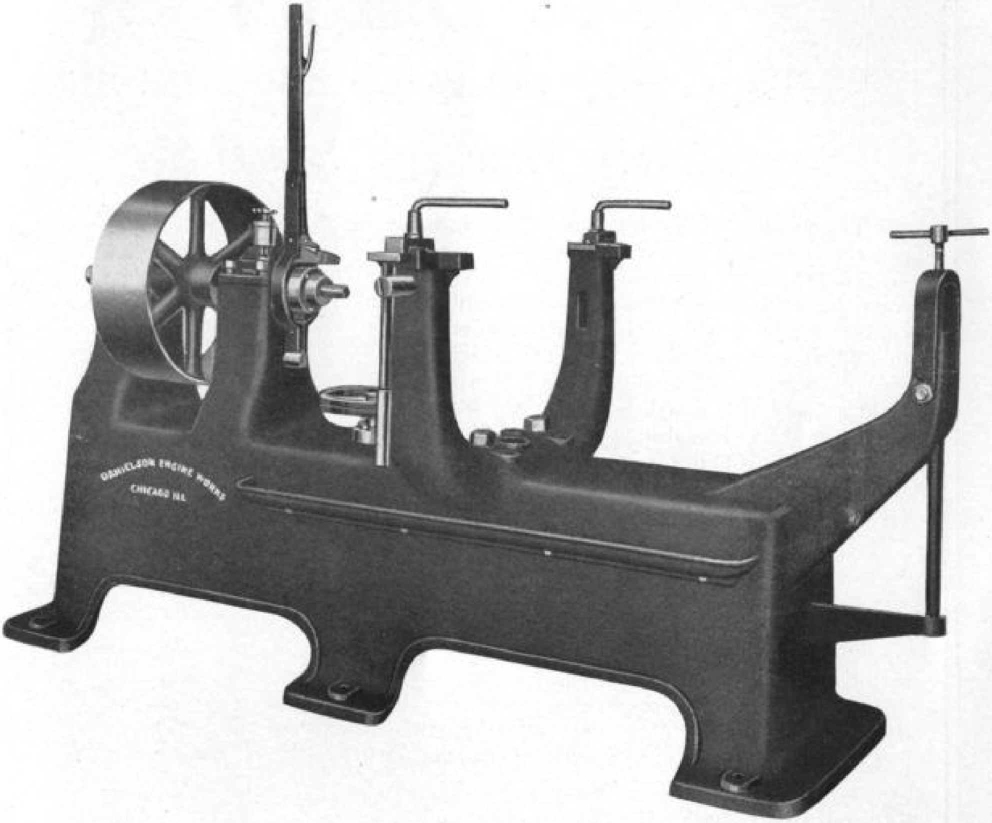
DANIELSON SPINDLE JIG
for Straightening Boss on Spindle Arm



JIG FOR STRAIGHTENING BOSS ON SPINDLE ARM. No. 1-J.

This jig insures perfect accuracy of alignment, eliminates delay in fitting the bolts, and insures easy steering. The pins in this jig are hardened, ground accurately, and knurled. A sliding gauge is provided for the alignment of right and left spindle arms. *Price, $45.00.*

Motor-"Running-In-Machine" built for Ford Service Stations



DANIELSON RUNNING-IN STAND.

In this machine you get the only one that is adjustable in every way—sidewise or up and down. This is a very important feature, as it prevents the serious consequences due to unnecessary strains on the motor, which are sure to happen when lack of adjustability compels the use of a crowbar.

To limber up a motor in this stand, and thereby avoid the necessity of towing the car after being assembled, you simply place it in position and adjust each part until the alignment is perfect.

On ordinary "running-in machines" a bent arm throws the motor out of line and makes it necessary to use a crowbar to line it up correctly. This throws an unnecessary strain on the rear transmission bearing which often has serious results. The Danielson machine has handles for tightening the adjustments on all sides. All wearing parts are hardened and the stand is built heavy to hold up under the work.

Add a Danielson Running-In Stand to your shop equipment and you will find it paying for itself in time saved and money earned. *Price, $275.00,* including clutch for pulley.

The Danielson B

Especially Designed and Manufactu

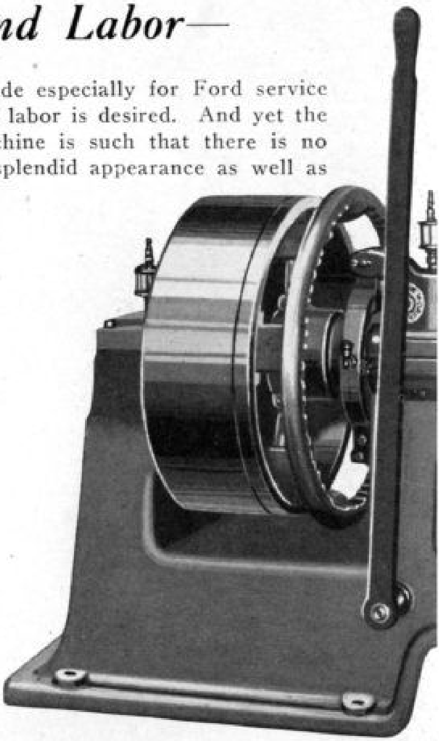
Saves Time and Labor—

The Danielson Burning-In Machine is made especially for Ford service and repair shops where the saving of time and labor is desired. And yet the grade of work that can be done on this machine is such that there is no room for criticism. The machine puts up a splendid appearance as well as doing splendid work. It is attractive enough to add character to any shop and efficient enough to turn out a quality of work that will build a reputation worth while for the shop. The machine is substantial and well finished, and no shop can well afford to get along without it, as it is by far and without doubt the best machine of its kind made.

Accuracy Necessary

The Danielson is, first of all, very accurate. An inaccurate machine is likely to ruin the motor block beyond repair. The bearings of this machine are bored out to exact alignment with the Ford motor block. The clutch is 20 inches in diameter, with hardwood friction blocks controlled with four turn-buckles. The throwout collar is a heavy bronze casting and the bearings are of very best babbitt metal.

The shaft is 2¼ inches in diameter. The coupling is of machine steel, fitted with tool steel bushings for holding the driving pins which are made of drill rods. The clamping posts are of heavy steel, 1 3/16 inches in diameter. One of them is hinged. Both are finished all over, including the knobs. The clamping bar is machined, and the machine is equipped with side feed oil cups.



DANIELSON BU

The machine pictured here is c
bearing a perfect, hardened, glaze
the entire operation is just one ho
other of similar purpose and you
quality of the machine and the cla

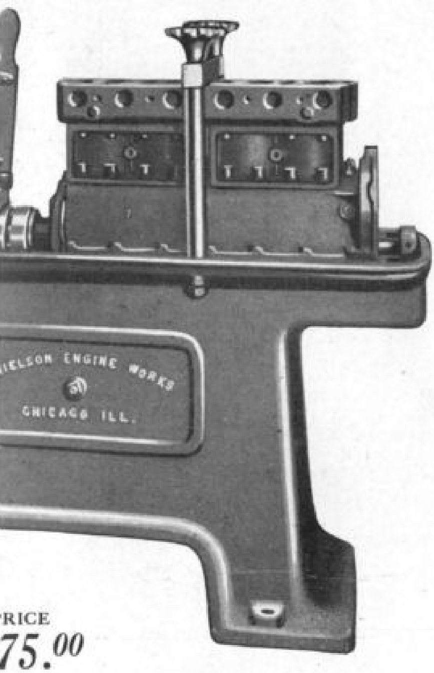
This machine is giving perfect satisfaction in

rning-In Machine

d for Ford Service and Repair Shops

Produces Accurate Work—

To Fit Crank Shaft and Connecting Rod Bearings



RICE

75.00

NG-IN MACHINE

hat will pay for itself. It gives the sh, and the total time consumed for Compare this machine with any find a big difference both as to the work it turns out.

1. Securely fasten cylinder block in a Danielson Cylinder Block Clamp, No. 1 F.

2. Place crank shaft in bearings of block.

3. Place all three main bearing caps in their relative positions.

4. Rock caps on crank shaft. If caps do not rock, file enough off cap so that it will rock from .004 to .006. Should the cap rock more than this amount, it is necessary to use brass shims to take up the difference.

5. After all caps have an equal rock (.004 to .006), draw down main bearing bolts.

6. Place cylinder block in Burning-In Machine; push down pin flange into place with small lever; throw in clutch and let run 1½ minutes.

7. Release clutch and pull hand wheel. If crank shaft can be turned by hand wheel, the main bearings are finished.

8. Hold cylinder block in Danielson Fixture No. 2 F and insert pistons and connecting rods.

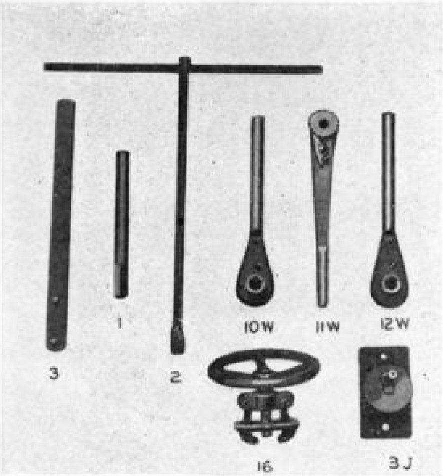
9. File enough off connecting rod caps so that they will rock .004.

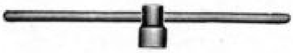
10. Clamp all four connecting rod caps and cotter pin them.

11. Put oil on all three main bearings so as to prevent them from further burning while burning the connecting rod bearings.

12. Repeat burning-in operation same as for main bearings. Let run until hand wheel can be turned by hand. All main and connecting rod bearings are now finished and the motor is ready for assembly.

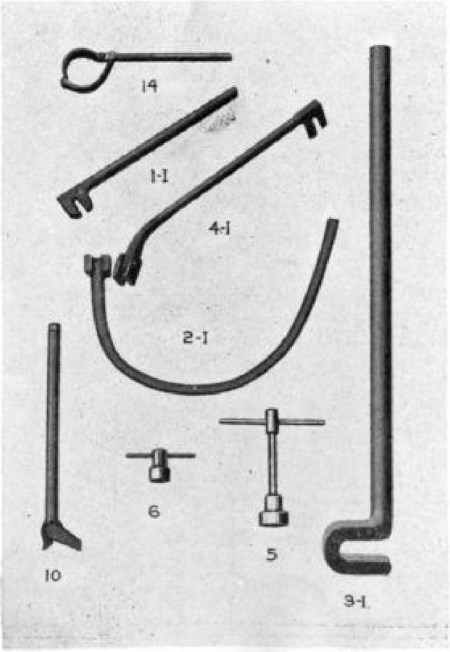
any of the best equipped Ford Service Stations





3T

No. 3T—Drive Shaft Pinion Nut Wrench
Price **$1.50**



ONE-MAN TOW BAR

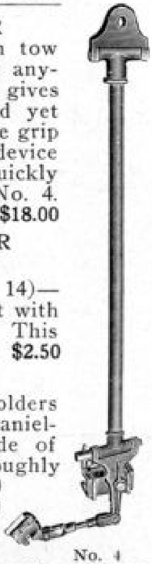
No. 4—Here is a one-man tow bar that permits no binding anywhere. The universal joint gives a freedom of movement and yet does not hinder or weaken the grip of the bar. Compare this device with any other and you will quickly see the superiority of our No. 4. Price **$18.00**

UNIVERSAL REAMER SPEEDER

No. 12S—(Shown on page 14)—Has slots milled in alignment with center to prevent shattering. This is a distinct advantage. Price **$2.50**

DIE HOLDERS

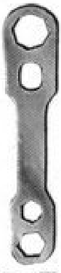
Nos. 5 and 6—These die holders are excellent examples of Danielson quality. They are made of high grade steel and thoroughly hardened. Price **No. 5**. . .**$3.00**
Price **No. 6**........... .. **2.50**



No. 4

HUB CAP WRENCH

No. 8W—Hand forged and case hardened. Holes are drilled and broached close to size of nut, insuring perfect fit. Much heavier than ordinary hub cap wrench.
Price **$3.50**



No. 8W

RATCHET WRENCHES

Nos. 10W, 11W and 12W—These are high grade wrenches of the ratchet type for use in confined places where freedom of movement is limited.

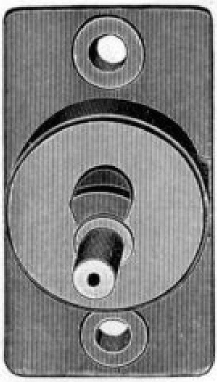
No. 10W.	Price............	**$10.00**
No. 11W.	Price............	**10.00**
No. 12W.	Price............	**10.00**

DIFFERENTIAL CASE TESTING BAR

No. 23A—For testing left side between centers for a sprung drive gear flange. Is slightly hardened and ground tapered, to accuracy. Price **$5.10**

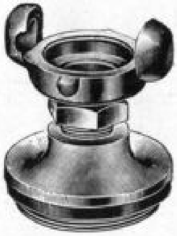
TRIPLE GEAR RIVETING JIG

No. 3J—A simple tool that enables one man to tighten the rivets on a triple gear without having a second man hold it for him. Takes less than a minute to do the job in this way. Anvil is of tool steel and hardened.
Price **$8.00**



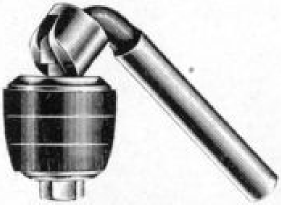
3J

RADIATOR TEST TOOLS

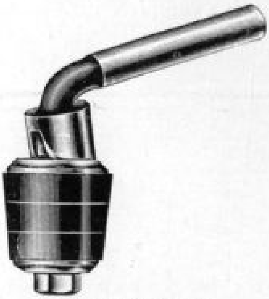


No. 11—Top Test Tool. The simple devices here shown have proved to be the most efficient means of testing radiators. The top test tool here shown is made of tool steel and hardened. The threads on these will easily outwear several of those on the ordinary cast iron test tools. The No. 11 is fitted with an air hose coupling.

Price $3.00



Nos. 12 and 13 Expanded



No. 12 and 13 Relaxed

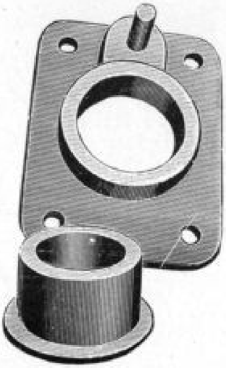
No. 12—Radiator Test Plug. We show here two views of this device. The above shows plug relaxed; on the left expanded by means of the eccentric. Made of hardened steel and best grade of soft rubber, which makes a perfectly air tight fit.

Price $3.00

No. 13—Water Outlet Connection. Similar to No. 12 in appearance and construction.

Price $3.00

(We make two sizes of inlet tools. When ordering specify on which models tools are to be used.)

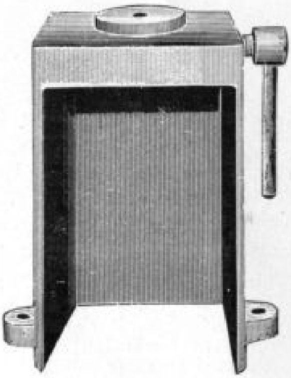


No. 4F

REAMING FIXTURE.

No. 4F—For holding reverse plate assembly and slow speed assembly while reaming bushings. The drum on these assemblies is too small to permit sufficient leverage when held in the hands. This fixture, however, holds the drum perfectly secure and permits the use of a long-handled wrench on the reamer.

Price $9.00



No 6F

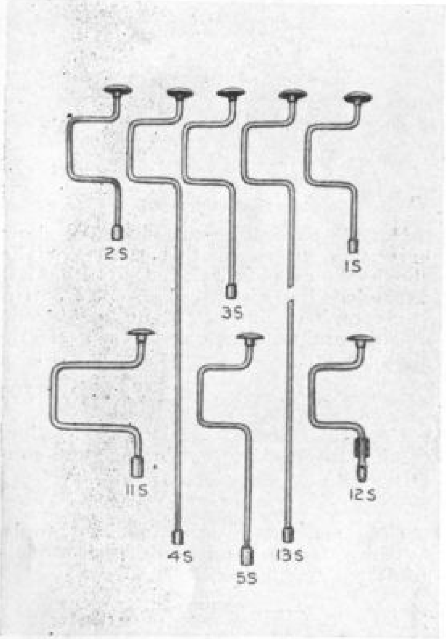
VALVE FILING FIXTURE

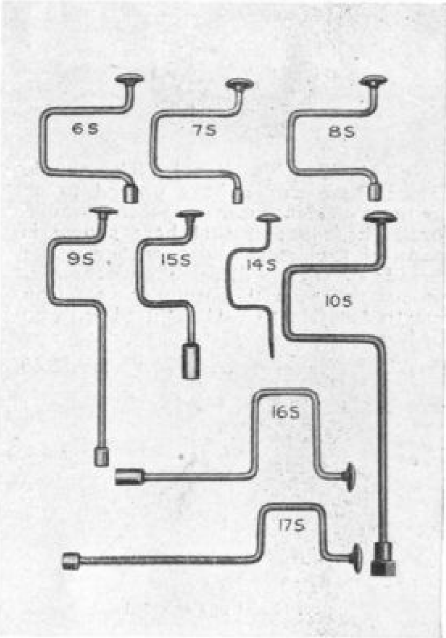
No. 6F—The purpose of this fixture is to enable the workman to file the valve stem perfectly square across, thus insuring even wear and longest good service. The file guide is made of steel and hardened. The screw on the side holds the valve firmly in place while being filed.

Price $8.00

Complete List of Danielson Repair Tools, Fixtures, etc.

Here is a complete list of Danielson tools, fixtures, etc., classified under the various heads where they belong. These articles are nearly all illustrated in another part of this book and can be found very readily by referring to the other pages.



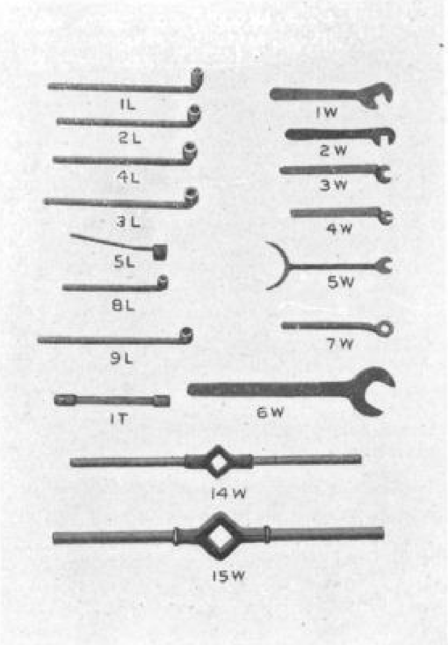


SPEEDERS

No.	USED ON	Price
1-S	Lower Crank Case Cover Screws	$ 0.75
2-S	Front Cover Screws—Valve Cover Nuts—Driving Plate Screws—Front Radius Rod Ball Socket Cap	.75
3-S	Crank Case Screws and Nuts—Valve Cover Nuts—Transmission Cover Screws	.75
4-S	Taking off and putting on Radiator	1.25
5-S	Cylinder Head Cap Screws	.75
6-S	Main Bearing Hexagon Nuts	1.00
7-S	Main Bearing Square Nuts	1.00
8-S	Main Bearing Oblong Nuts	1.00
9-S	Fan Bolt—Steering Gear Ball Arm Lock Nut	1.00
10-S	Cam Gear Lock Nut	1.50
11-S	Universal Reamer Speeder for Cam Shaft Bearings	.75
12-S	Valve Reamer Speeder—for use with Reamer 27-Z 18	2.50
13-S	Universal Ball Cap Screws	1.75
14-S	Magnet and Transmission Sloping Door Screws	.75
15-S	Front Cone Speeder	1.30
16-S	Rear Perch Nuts	1.00
17-S	Rear Axle Nuts	1.00
18-S	Front Radius Rod and Body Bolts	.75
19-S	Running Board Nuts	1.00
20-S	Fender Nuts	1.00
21-S	Cam Gear Lock Nut	1.30
22-S	Differential Housing Bolts and Nuts	.75
23-S	Steering Gear Ball Arm Lock Nut	1.00

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

Special Ford Wrenches, etc. etc.



L. WRENCHES

No.	USED ON	Price
1-L	Cylinder Head Cap Screws	$ .75
2-L	Main Bearing Hexagon Nuts—Front Lamp Nuts	.75
3-L	Main Bearing Square Nuts	.75
4-L	Main Bearing Oblong Nuts	.75
5-L	Connecting Rod Cap Nuts—adaptable for the fourth bearing	.75
7-L	Front Radius Rod Nut—Rear Spring Clip Nuts	.75
8-L	Differential Housing Bolts and Nuts	.75
9-L	Drive Shaft Roller Bearing Housing Nuts	.75
10-L	Body Bolt	.75
1-T	Crank Case and Transmission Bolts and Nuts	1.00
2-T	Body Bolt	1.30
3-T	Drive Shaft Pinion Nut Wrench	1.50

WRENCHES

No.	USED ON	Price
1-W	Universal Entering Wrench	$ .75
2-W	Holding Main Bearing Nuts	.75
3-W	Flywheel Cap Screw	.75
4-W	Piston Set Screw	.75
5-W	This wrench is formed to shape of leg and used to hold Crank Case Screw or Nut when using 3-S or 1-T. Does away with an extra man on this work	1.00
6-W	Exhaust Pipe Rack Nut	2.00
7-W	Front Spring Clip and Spindle Body Bolt	.75
8-W	Combination wrench with four holes to fit Hub Cap, Front Cone, Spindle Arm Nut and Rear Axle Nut	3.50

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

WRENCHES—Continued

No.	USED ON	Price
9-W	Rear Spring Perch Nuts	1.50
10-W	Drive Shaft Pinion Nut Ratchet Wrench	10.00
11-W	Front Radius Rod Nut Ratchet Wrench	10.00
12-W	Front Spring Perch Nut Ratchet Wrench	10.00
14-W	Reamer Wrench for Reverse Gear Bushing Reamer	3.00
15-W	Reamer Wrench for Slow Speed Bushing Reamer	2.50

IRONS

1-I	Straightening Connecting Rods—Bending Lamp Brackets and Fender Irons	$ 2.00
2-I	Bending Steering Gear Ball Arm	4.00
3-I	Straightening Front Axle	6.00
4-I	Bending Pedals	4.00

FIXTURES

1-F	Holding Cylinder while scraping Bearings	$ 18.00
2-F	Holding Cylinder while assembling C-400	15.00
3-F	Holding Piston while assembling Connecting Rod	18.00
4-F	Holding Reverse Plate Assembly and Slow Speed Assembly while reaming Bushings	9.00
5-F	Holding Cam Shaft Bushing while reaming same	12.00
6-F	Holding Valves while filing ends	8.00

JIGS

1-J	Testing alignment of Boss on Spindle Arm, right and left, when assembled to spindle	$ 45.00
2-J	Testing alignment of finished Connecting Rods	50.00
3-J	Tightening Rivets in Triple Gear	8.00

MISCELLANEOUS

1	Removing Motor and Transmission from Crank Case	$ 1.50
2	Lapping in oversize Pistons	3.00
3	Crank Shaft Turning Bar	1.50
4	One-Man Tow Bar	18.00
5	Die Holder for Gear Lock Nut Threads on Cam Shaft	3.00
6	Die Holder for Commutator Threads on Cam Shaft	2.50
8	Lining up Front Wheels	1.50
10	Drive Shaft Puller	2.50
11	Radiator Test Tool Cap	3.00
11-X	Radiator Test Tool Cap Air Connection	
12	Radiator Test Tool Inlet	3.00
13	Radiator Test Tool Outlet	3.00
14	Removing and Putting on Steering Gear Cover	3.75
17	Surface plate for testing level of Main Bearings and Connecting Rod Caps	8.00
	Burning-In Machine	275.00
	Running-In Machine	275.00
	Babbitting Fixture for Connecting Rods	50.00
	Boring Fixture for Connecting Rods	75.00
	Facing Fixture for Connecting Rods	15.00
	Facing Tool for Connecting Rods	10.00
	Broach for Connecting Rods	35.00
	If complete Babbitting outfit is ordered the price is	165.00

The Danielson Speeders, L Sockets, and Wrenches cannot be compared with any other similar product on the market today. The handles are of best quality cold rolled steel, the sockets are accurately machined and drilled and broached by our own special method, which insures a perfect fit. They are then case hardened in our own shops. All of the Speeders wrenches are fully guaranteed and if defective in any way we replace them free of charge.

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

TOOLS NECESSARY FOR OVERHAULING MOTOR

No.	USED ON	Price
1-S	Lower Crank Case Cover Screws	$ 0.75
2-S	Front Cover Screws and Valve Cover Nuts	.75
3-S	Crank Case Screws and Nuts and Transmission Bolts	.75
5-S	Cylinder Head Cap Screws	.75
6-S	Main Bearing Hexagon Nuts	1.00
7-S	Main Bearing Square Nuts	1.00
8-S	Main Bearing Oblong Nuts	1.00
11-S	Universal Reamer Speeder for Cam Shaft Bearings	.75
12-S	Valve Reamer Speeder—for use with Reamer 27-Z 18	2.50
14-S	Magnet and Transmission Sloping Door Screws	.75
21-S	Cam Gear Lock Nut	1.30
23-S	Commutator Lock Nut and Fan Bracket Bolt	1.00
1-L	Cylinder Head Cap Screws	.75
2-L	Main Bearing Hexagon Nuts	.75
3-L	Main Bearing Square Nuts	.75
4-L	Main Bearing Oblong Nuts	.75
5-L	Connecting Rod Cap Nuts—adaptable for the fourth bearing	.75
1-T	Tightening and loosening Crank Case and Transmission Bolts and Nuts	1.00
2-W	Holding Main Bearing Nuts	.75
3-W	Fly Wheel Cap Screws	.75
4-W	Piston Set Screws	.75
5-W	This Wrench is formed to shape of leg and used to hold Crank Case Screw or Nut when using 3-S or 1-T. Does away with an extra man on this work	1.00
6-W	Exhaust Pipe Pack Nut	2.00
2-A	Bar for aligning Main Bearings	4.00
3-A	Pressing Crank Shaft Gear off	1.00
4-A	Pressing Crank Shaft Gear on	1.25
5-A	Driving out Piston Pin	1.15
6-A	Driving out Piston Pin Bushing	1.15
7-A	Driving Rear Cam Shaft Bearing out and in	1.15
8-A	Punching Oil Drain Holes in Valve Cages of Cylinder Block	.85
8-Aa	Disassembling Valve Pins from Valves	1.10
33-A	Cam Shaft Bushing in and out	1.15
41-A	Starting Crank Sleeve Bushing Driver	1.15
43-A	Driving Pin out of Cam Shaft and Commutator Brush Assembly	1.50
I-I	Straightening Connecting Rod	2.00
1-F	Holding Cylinder while scraping Bearings	18.00
2-F	Holding Cylinder on work bench while assembling C-400	15.00
3-F	Holding Piston while assembling Connecting Rods	18.00
5-F	Holding Cam Shaft Bushing while reaming same	12.00
6-F	Holding Valves while filing ends	8.00
2-J	Testing alignment of finished Connecting Rods	50.00
	If you want to do justice to yourself and customers, you cannot be without this gauge. Many motors have been disassembled several times to locate "knocks," which is the most difficult trouble to find. After inspecting every moving part the trouble has been found in the connecting rod being out of alignment.	
	This gauge will pay for itself in a few jobs.	
1	Removing Motor and Transmission from Crank Case	1.50
2	Lapping in oversize Pistons	3.00
3	Crank Shaft Turning Bar	1.50
5	Gear Lock Nut Threads on Cam Shaft	3.00
6	Commutator Threads on Cam Shaft	2.50
17	Testing level of Main Bearing and Connecting Rod Caps	8.00

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

TOOLS NECESSARY FOR OVERHAULING TRANSMISSION

No.	USED ON	Price
2-S	Driving Plate Screws	$ 0.75
14-S	Transmission Sloping Door and Magnet Clamp Screws	.75
3-W	Used in combination with Driven Gear Puller	.75
4-W	Driving Plate Screws	.75
14-W	Reamer Wrench for Reverse Gear Bushing Reamer	3.00
15-W	Reamer Wrench for Slow Speed Bushing Reamer	2.50
9-A	Prying up Disc Drum (two required). When Drum is on too tight, use Puller	.80
10-A	Plug to use with Driven Gear Puller	1.25
11-A	Spacing Transmission Brake Drum while pressing Driven Gear Sleeve Bushings in and out	.50
12-A	Pressing Driven Gear Sleeve Bushings out	1.30
13-A	Pressing in Driven Gear Sleeve Bushings	1.75
14-A	Pressing Triple Gear Bushings in and out	1.15
15-A	Expanding Triple Gear Bushings	2.00
16-A	Pressing Reverse Drum Bushings in and out	2.75
17-A	Driving Slow Speed Bushings out of Drum	1.00
18-A	Pressing Slow Speed Bushing in Drum	2.00
19-A	Driving on Clutch Disc Drum	1.00
4-F	Holding Reverse Plate Assembly and Slow Speed Assembly while Reaming Bushings	9.00
3-J	Tightening Rivets in Triple Gear	8.00

TOOLS NECESSARY FOR OVERHAULING REAR AXLE

No.	USED ON	Price
1-S	Removing and assembling Drive Gear to Differential Housing	$ 0.75
22-S	Differential Housing Bolts and Nuts	.75
6-L	Drive Shaft Pinion Nut	2.00
8-L	Differential Housing Bolts and Nuts	.75
9-L	Drive Shaft Roller Bearing Housing Nuts	.75
10-W	Drive Shaft Pinion Nut Ratchet Wrench	10.00
3-T	Drive Shaft Pinion Nut	1.50
22-A	Pressing Differential Case Bushing in and out—old style	1.75
23-A	Testing Differential Case, left side, between centers for sprung Drive Gear Flange	5.10
24-A	Pressing down Differential Gear on Axle while removing Differential Gear Lock Rings	1.75
25-A	Pressing Axle Shaft out of Differential Gear	.75
26-A	Driving Differential Pinion Bushing in and out—old style	1.15
27-A	Pressing Differential Spider Bushing in and out—old style	1.15
28-A	Pressing Drive Shaft Roller Bearing Sleeve in and out	3.00
29-A	Driving Drive Shaft Sleeve on Drive Shaft—spaced for Pinion	2.00
30-A	Driving Drive Shaft Housing Front Bushing in	2.00
31-A	Rear Spring Perch Bushing in and out—Rear Main Spring Leaf Bushing in and out	1.15
10	Drive Shaft Puller	2.50

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

TOOLS NECESSARY FOR OVERHAULING FRONT SYSTEM

No.	USED ON	Price
15-S	Front Cone Speeder	$ 1.30
18-S	Front Radius Rod Nut	.75
23-S	Steering Gear Ball Arm Lock Nut	1.00
24-S	Wheel Lock Nut Speeder	1.00
7-L	Front Radius Rod Nut	.75
7-W	Front Clip and Spindle Body Bolt	.75
11-W	Front Radius Rod Nut Ratchet Wrench	10.00
12-W	Front Spring Perch Nut Ratchet Wrench	10.00
13-W	Front Spring Clip and Spindle Body Bolt Ratchet Wrench	9.50
3-I	Straightening Front Axle	6.00
32-A	Driving out first Spindle Body Bushing	1.00
33-A	Driving second Spindle Body Bushings out Driving Both Spindle Body Bushings in	1.15
34-A	Driving Spindle Arm Bushings in and out	1.10
35-A	Driving Front Spring Perch Bushing in and out Driving Front Main Leaf Bushing in and out Driving Spindle Arm Bushing in and out	1.15
36-A	Sleeve to be used as an Adapter with a piece of ½-inch drill rod—18 inches long, to place in Spring Perch holes of Front Axle for testing for alignment when straightening Axle. (Two required.) Use drill rods without Adapter when testing Spindle Body Bolt Holes for alignment with one another	1.50
39-A	Driving in Spindle Body and Arm Bolts	1.00
40-A	Driving Stationary Cones on and off Spindle	1.00
1-J	Straightening Boss on Spindle Arm right and left when assembled to Spindle	45.00

TOOLS NECESSARY FOR OVERHAULING STEERING GEAR ASSEMBLY

No.	USED ON	Price
23-S	Steering Gear Ball Arm Lock Nut	$ 1.30
38-A	Driving Steering Post Bracket Bushings in and out	1.50
42-A	Driving Steering Wheel on	.90
14	Steering Gear Cover	3.75
16	Steering Wheel Puller	8.50

MISCELLANEOUS SHOP EQUIPMENT

No.	USED ON	Price
10-S	Cam Gear Lock Nut when Motor is in Chassis	$ 1.50
13-S	Universal Ball Cap Screw	1.75
1-I	Bending Lamp Brackets and Fender Iron	2.00
2-I	Bending Steering Gear Ball Arm	4.00
3-I	Straightening Front Axle	6.00
4-I	Bending Pedals	4.00
7	Bumping Dolly	1.00
8	Lining up Front Wheels	1.50
11	Radiator Test Tool Top	3.00
12	Radiator Test Tool Bottom	3.00
13	Radiator Test Tool Water Outlet Connection	3.00

SERVICE CAR EQUIPMENT

No.		Price
4	One Man Tow Bar	$18.00
3-I	Straightening Front Axle	6.00

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.

TOOLS NECESSARY FOR SERVICE MAN TO PERFORM

THE FOLLOWING OPERATIONS

To remove from Chassis and Reassemble

- Motor
- Rear Axle
- Rear Spring
- Front System
- Front Spring
- Radiator
- Body

- Grinding Valves
- Clean Carbon
- Eliminating Oil Leaks in Cylinder
- Reline Transmission Bands
- Replace Fenders
- Replace Running Board
- Adjusting Front Wheels
- Aligning Front Wheels
- Tightening Lamps

No.	USED ON	Price
1-S	Lower Crank Case Cover Screws	$ 0.75
2-S	Front Cover Screws—Valve Cover Nuts—Driving Plate Screws—Front Radius Rod Ball Socket Cap	.75
3-S	Crank Case Screws and Nuts—Valve Cover Nuts—Transmission Cover Screws	.75
4-S	Taking off Radiator and putting on	1.25
5-S	Cylinder Head Cap Screws	.75
9-S	Fan Bolt and Steering Gear Ball Arm Lock Nut	1.00
10-S	Cam Gear Lock Nut Speeder	1.50
12-S	Valve Reamer Speeder—for use with Reamer 27-Z 18	2.50
16-S	Rear Perch Nut	1.00
17-S	Rear Axle Nut	1.00
18-S	Front Radius Rod and Body Bolt	.75
19-S	Running Board Nuts	1.00
20-S	Fender Nuts	1.00
1-L	Cylinder Head Cap Screws	.75
2-L	Front Lamp Nuts—Main Bearing Hexagon Nuts	.75
5-L	Connecting Rod Cap Nut adaptable for the fourth bearing	.75
7-L	Front Radius Rod and Rear Spring Clip Nut	.75
10-L	Body Bolt	.75
1-W	Universal Entering Wrench	.75
6-W	Exhaust Pipe Pack Nut	2.00
7-W	Front Spring Clip and Spindle Body Bolt	.75
8-W	Combination Wrench with four holes to fit Hub Cap, Front Cone, Spindle Arm Nut, and Rear Axle Nut	3.50
9-W	Rear Spring Perch Nut	1.50
2-I	Bending Steering Gear Ball Arm	4.00
3-I	Straightening Front Axle	6.00
1-T	Tightening and loosening Crank Case and Transmission Bolts and Nuts	1.00
2-T	Body Bolt	1.00
43-A	Driving Pin out of Cam Shaft and Commutator Brush Assembly	1.50

These Prices are Subject to Change Without Notice.

Important: Use Speeders for speeding on and off, the L Wrenches for loosening and tightening nuts and screws.